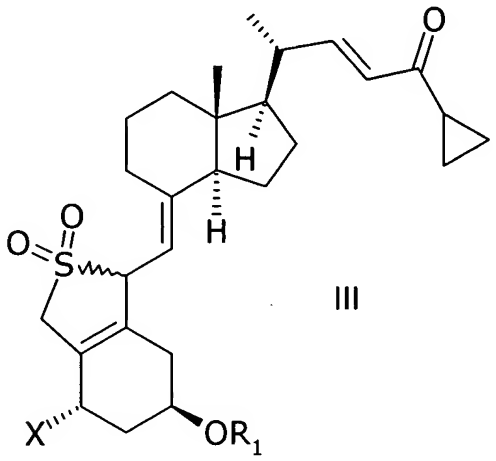
AMENDMENTS TO THE CLAIMS

Claims 1-29 (Cancelled)

30. (New) A method of reducing a compound of general structure III,



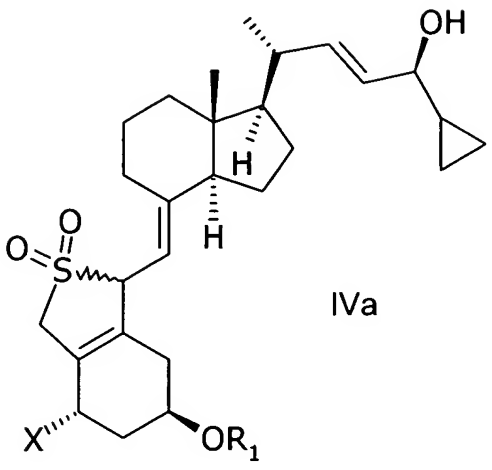
III

wherein X represents either hydrogen or OR_2,

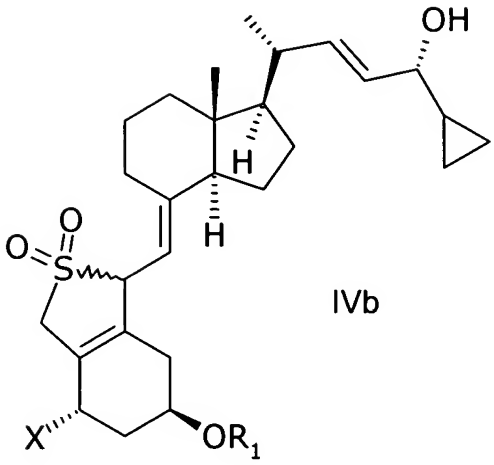
and wherein R_1 and R_2 may be the same or different and represent hydrogen, or a hydroxy protecting group,

in an inert solvent with a chiral reducing agent or with a reducing agent in the presence of a chiral auxiliary,

to give a mixture of compounds of general structure IVa and IVb,



IVa

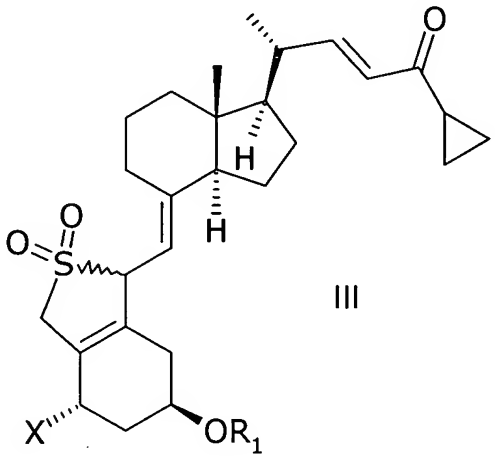


IVb

which is enriched with IVa, wherein X, R_1, and R_2 are as defined above.

31. (New) A method for producing calcipotriol {(5Z, 7E, 22E, 24S)-24-cyclopropyl-9,10-secochola-5,7,10(19),22-tetraene-1α-3β-24-triol} or calcipotriol monohydrate comprising the steps of:

(a) reducing a compound of general structure III,



III

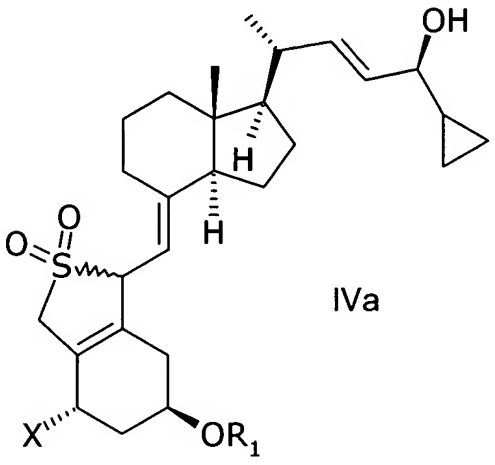
wherein X represents OR_2,

and wherein R_1 and R_2 may be the same or different and represent hydrogen or a hydroxy protecting group,

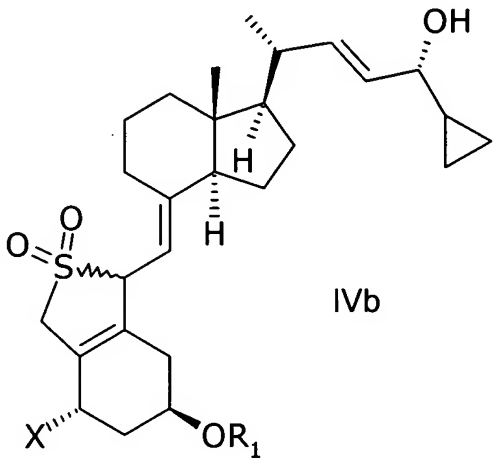
in an inert solvent with a chiral reducing agent or with a reducing agent in the presence of a chiral auxiliary,

to give a mixture of compounds of general structure IVa and IVb,

which is enriched with IVa,



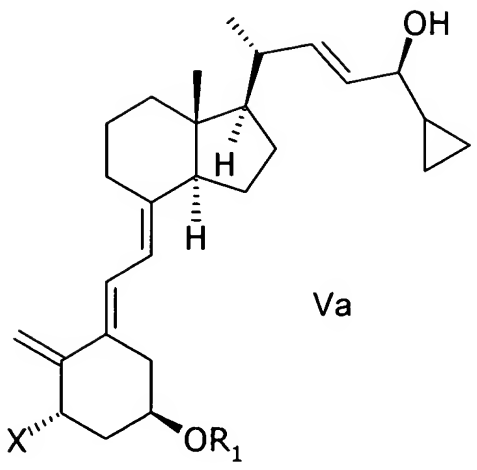
IVa



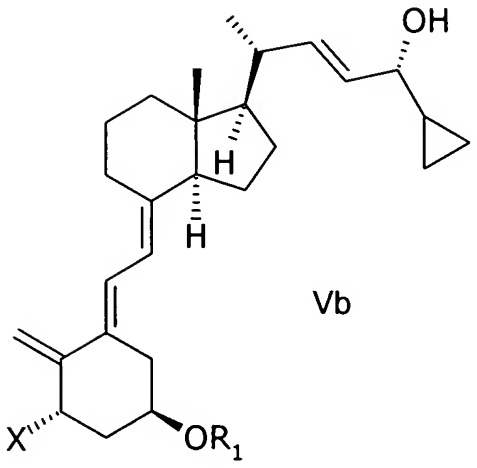
IVb

wherein X, R_1 and R_2 are as defined above;

(b) reacting the mixture of compounds of general structure IVa and IVb, which is enriched with IVa, in the presence of a base to give a mixture of compounds of general structure Va and Vb, which is enriched with Va,



Va

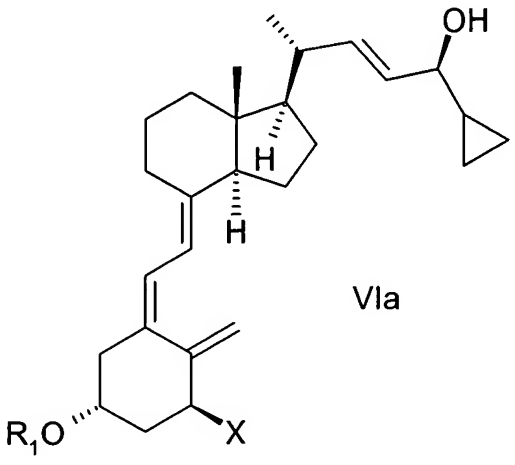


Vb

wherein X, R_1 and R_2 are as defined above;

(c) separating the compound of general structure Va from the mixture of compounds of general structure Va and Vb which is enriched with Va, wherein X, R_1 and R_2 are as defined above;

(d) isomerising the compound of general structure Va to the compound of general structure VIa,



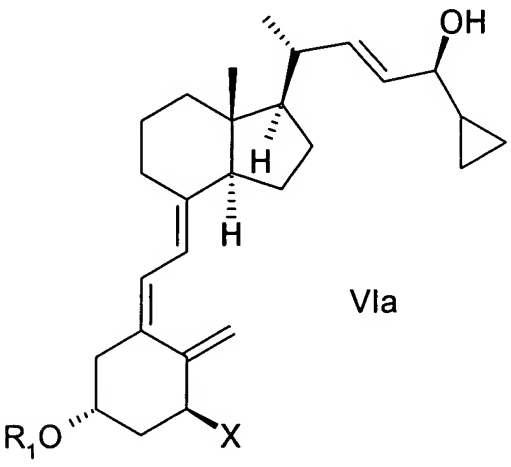
VIa

wherein X, R_1 and R_2 are as defined above; and

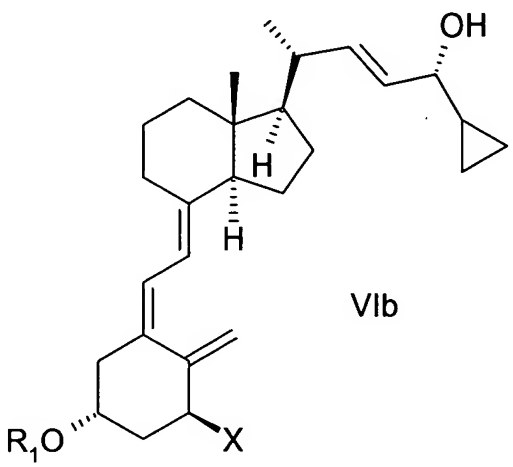
(e) when R_1 and/or R_2 are not hydrogen, removing the hydroxy protecting group(s) R_1 and/or R_2 of the compound of general structure VIa to generate calcipotriol or calcipotriol monohydrate.

32. (New) A method for producing calcipotriol or calcipotriol monohydrate comprising steps (a) – (b) of claim 31 and further comprising the steps of:

(f) isomerising the mixture of compounds of general structure Va and Vb, wherein X, R_1 and R_2 are as defined in claim 2, which is enriched with Va, to a mixture of compounds of general structure VIa and VIb, which is enriched with VIa,



VIa



VIb

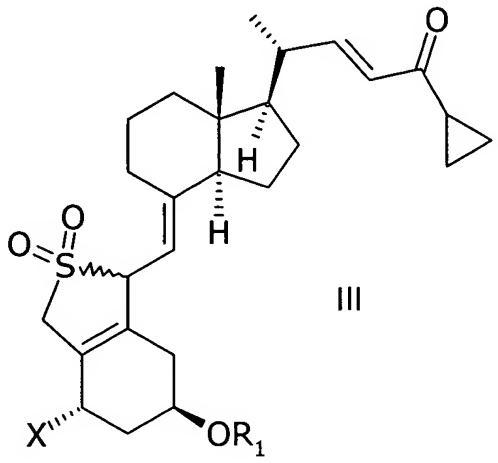
wherein X, R_1 and R_2 are as defined above;

(g) separating the compound of general structure VIa from the mixture of compounds of general structure VIa and VIb which is enriched with VIa, wherein X, R_1 and R_2 are as defined above;

(h) when R_1 and/or R_2 are not hydrogen, removing the hydroxy protecting group(s) R_1 and/or R_2 of the compound of general structure VIa to generate calcipotriol or calcipotriol monohydrate.

33. (New) A method for producing calcipotriol {(5Z, 7E, 22E, 24S)-24-cyclopropyl-9,10-secochola-5,7,10(19),22-tetraene-1α-3β-24-triol} or calcipotriol monohydrate comprising the steps of:

(j) reducing a compound of general structure III,



III

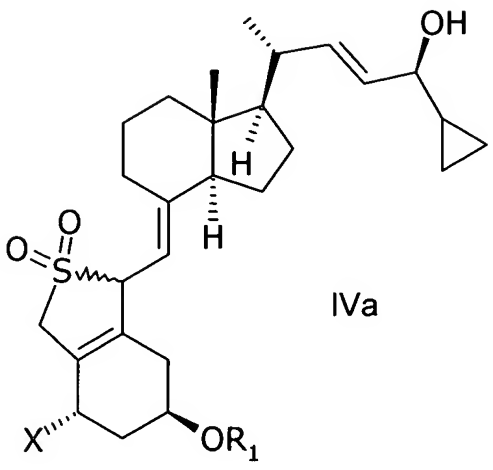
wherein X represents hydrogen,

and wherein R_1 represents hydrogen or a hydroxy protecting group,

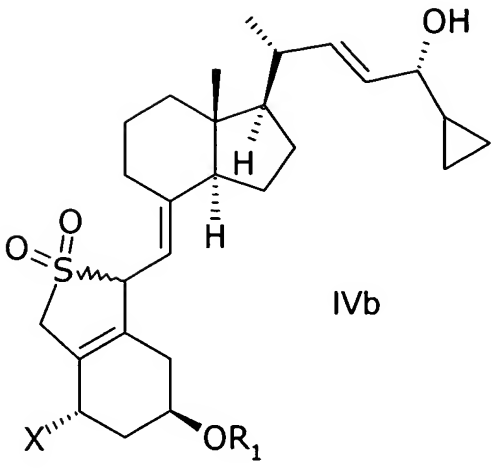
in an inert solvent with a chiral reducing agent or with a reducing agent in the presence of a chiral auxiliary,

to give a mixture of compounds of general structure IVa and IVb,

which is enriched with IVa,



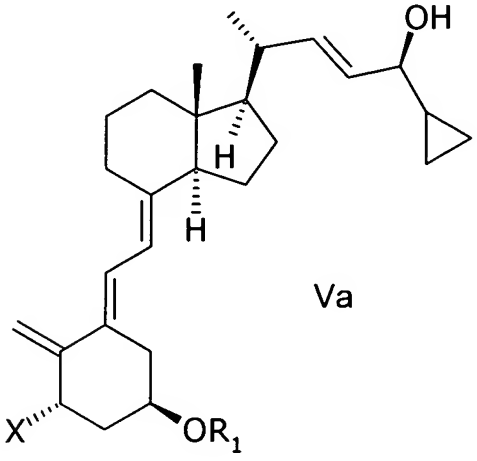
IVa



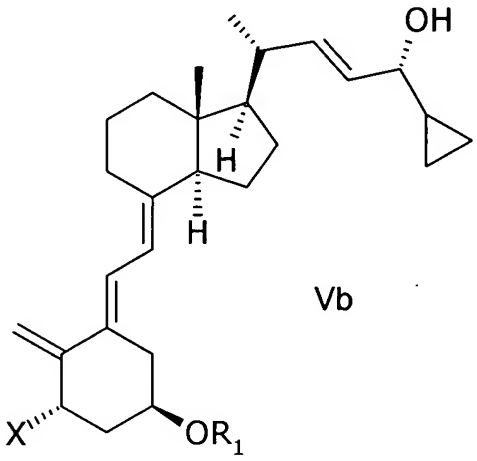
IVb

wherein X and R_1 are as defined above;

(k) reacting the mixture of compounds of general structure IVa and IVb, which is enriched with IVa, in the presence of a base to give a mixture of compounds of general structure Va and Vb, which is enriched with Va,



Va



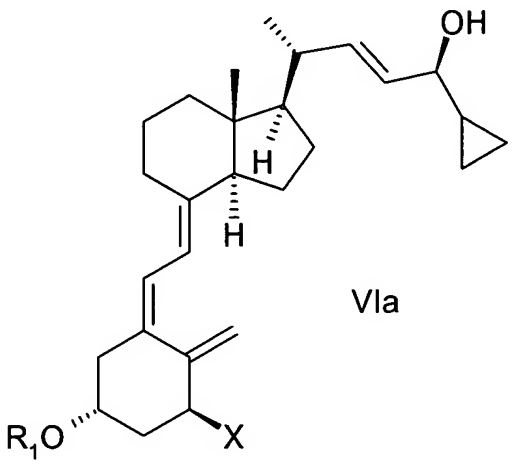
Vb

wherein X and R_1 are as defined above;

(l) separating the compound of general structure Va from the mixture of compounds of general structure Va and Vb which is enriched with Va, wherein X and R_1 are as defined above;

(m) hydroxylating the compound of general structure Va with a suitable hydroxylating agent, wherein X and R_1 are as defined above to give a compound of general structure Va, wherein X represents OR_2 and R_2 represents hydrogen, and wherein R_1 is as defined above;

(o) isomerising the compound of general structure Va to the compound of general structure VIa,



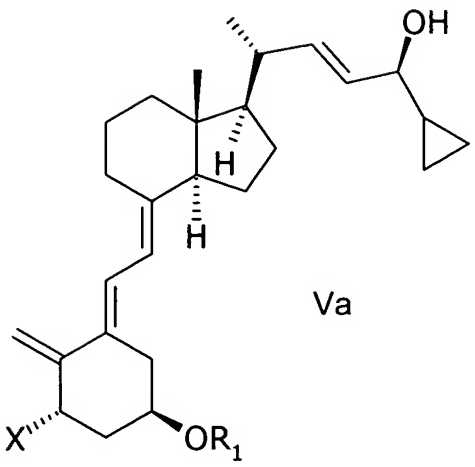
VIa

wherein X, R_1 and R_2 are as defined above; and

(p) when R_1 is not hydrogen, removing the hydroxy protecting group R_1 of the compound of general structure VIa to generate calcipotriol or calcipotriol monohydrate.

34. (New) A method for producing calcipotriol or calcipotriol monohydrate comprising steps (j) – (l) of claim 33 and further comprising the steps of:

(q) protecting the C-24 hydroxy group of the compound of general structure Va,



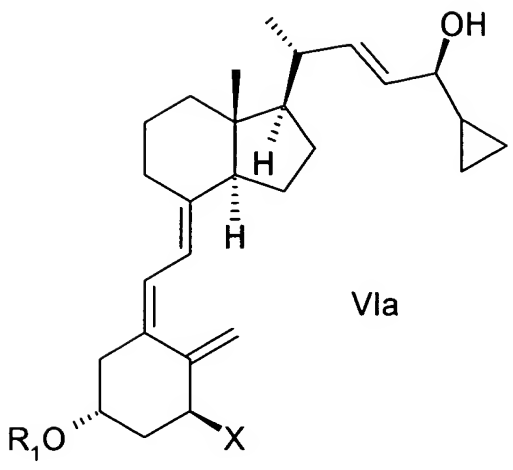
Va

wherein X represents hydrogen, and wherein R_1 represents hydrogen or a hydroxy protecting group, with a hydroxy protecting group;

(r) hydroxylating the C-24 hydroxy protected compound of general structure Va with a suitable hydroxylating agent, wherein X and R_1 are as defined above to give a C-24 hydroxy protected compound of general structure Va, wherein X represents OR_2 and R_2 represents hydrogen, and wherein R_1 is as defined above;

(s) removing the C-24 hydroxy protecting group of the compound of general structure Va;

(t) isomerising the compound of general structure Va to the compound of general structure VIa,



VIa

wherein X, R_1 and R_2 are as defined above; and

(u) when R_1 is not hydrogen, removing the hydroxy protecting group R_1 of the compound of general structure VIa to generate calcipotriol or calcipotriol monohydrate.

35. (New) The method according to claim 30, wherein the reducing step is with a reducing agent in the presence of a chiral auxiliary.

36. (New) The method according to claim 30, wherein the reducing agent is a borane derivative.

37. (New) The method according to claim 35, wherein the reducing agent is *N,N*-diethylaniline-borane, borane-tetrahydrofuran, or borane dimethylsulfide.

38. (New) The method according to claim 35, wherein the chiral auxiliary is a chiral 1,2-amino-alcohol.

39. (New) The method according to claim 35, wherein the chiral auxiliary is a chiral *cis*-1-amino-2-indanol derivative.

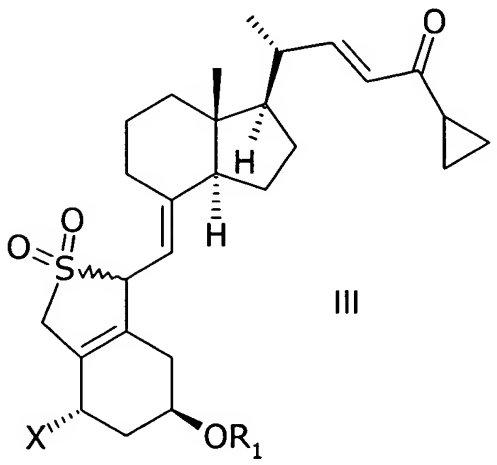
40. (New) The method according to claim 35, wherein the chiral auxiliary is (*1S,2R*)-(-)-*cis*-1-amino-2-indanol.

41. (New) The method according to claim 30, wherein the inert solvent is toluene, *tert*-butyl methyl ether, tetrahydrofuran, or mixtures thereof.

42. (New) The method according to claim 30, wherein the mixture of compounds of general structure IVa and IVb obtained by reducing a compound of general structure III has a molar ratio of IVa:IVb which is at least 56:44.

43 (New) The method according to claim 40, wherein the reducing step is carried out at a temperature between 10-20°C.

44. (New) A method for producing a compound of general structure III,

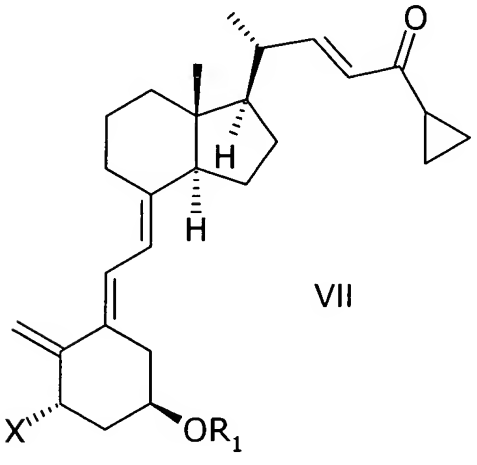


III

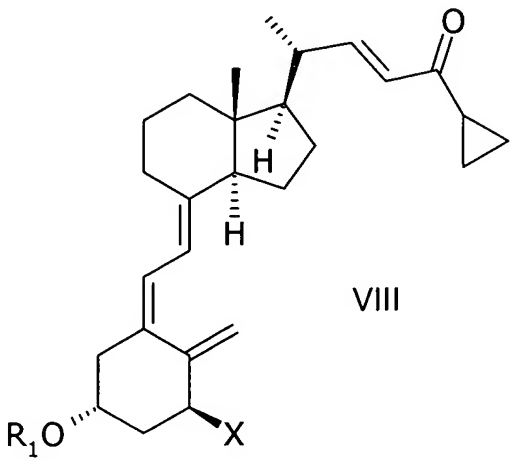
wherein X represents either hydrogen or OR_2,

and wherein R_1 and R_2 may be the same or different and represent hydrogen, or a hydroxy protecting group,

by reacting a compound of general structure VII or VIII,



VII

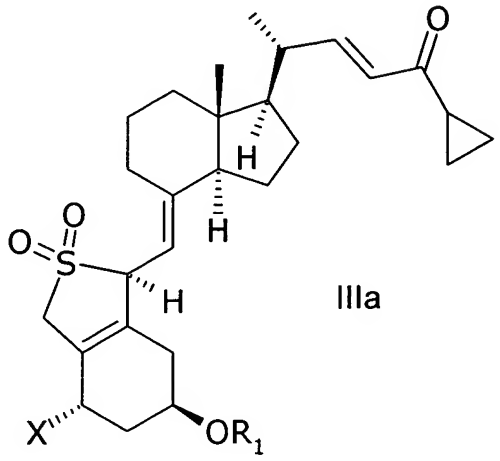


VIII

wherein R_1 and R_2 are as defined above,

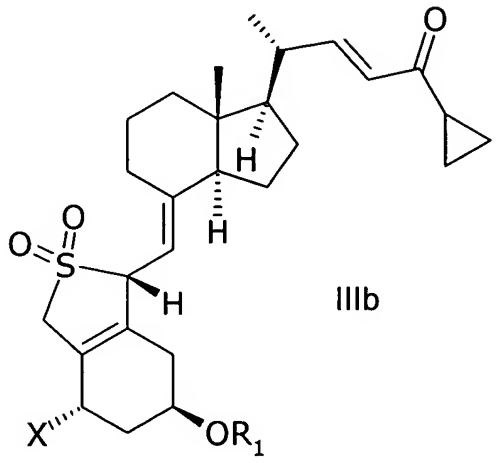
with sulphur dioxide.

45. (New) A method according to claim 30 or 44, wherein the compound of general structure III is the epimer of general structure IIIa



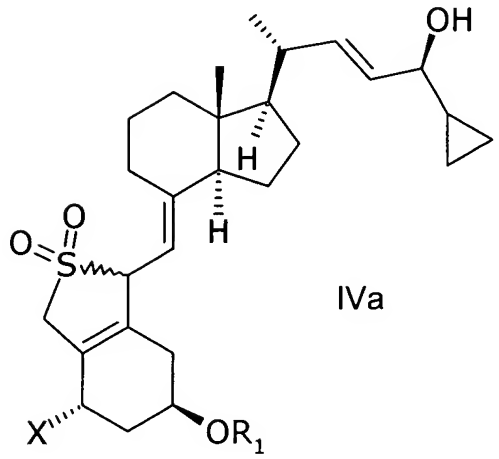
IIIa

46. (New) A method according to claim 30 or 44, wherein the compound of general structure III is the epimer of general structure IIIb

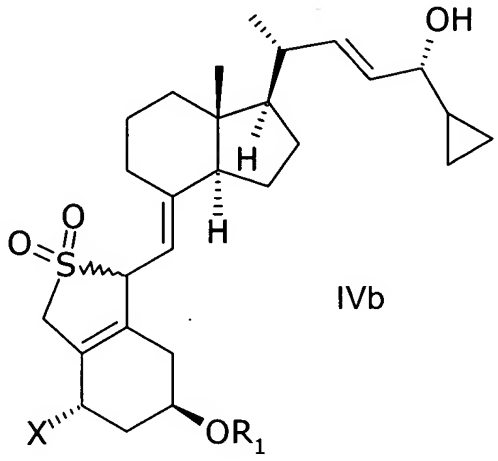


IIIb

47. (New) A method of reacting the mixture of compounds of general structure IVa and IVb ,



IVa

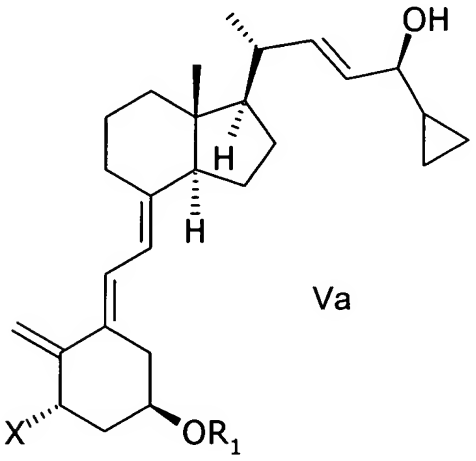


IVb

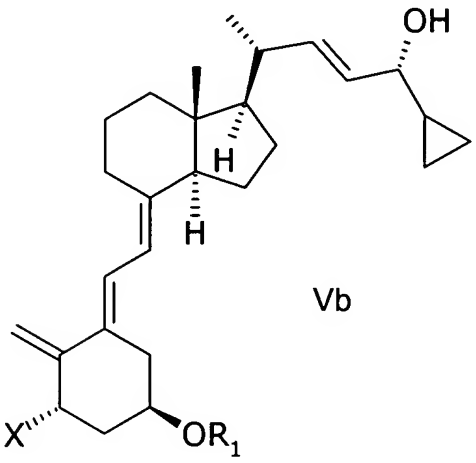
wherein X represents either hydrogen or OR_2,

and wherein R_1 and R_2 may be the same or different and represent hydrogen, or a hydroxy protecting group,

which is enriched with IVa, in the presence of a base to give a mixture of compounds of general structure Va and Vb, which is enriched with Va,



Va



Vb

wherein X, R_1, and R_2 are as defined above.

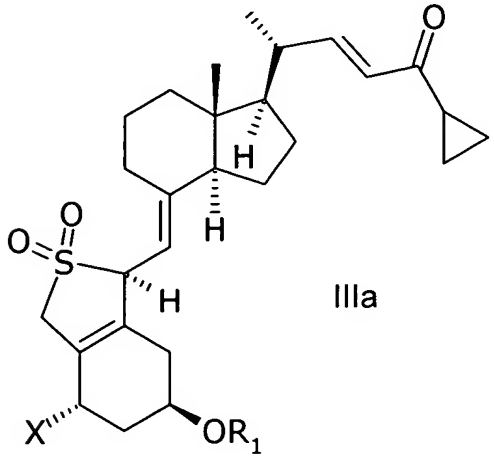
48. (New) A method according to claim 30, 44, or 47, wherein X represents OR_2.

49. (New) A method according to claim 48, wherein R_1 and/or R_2 represent alkylsilyl.

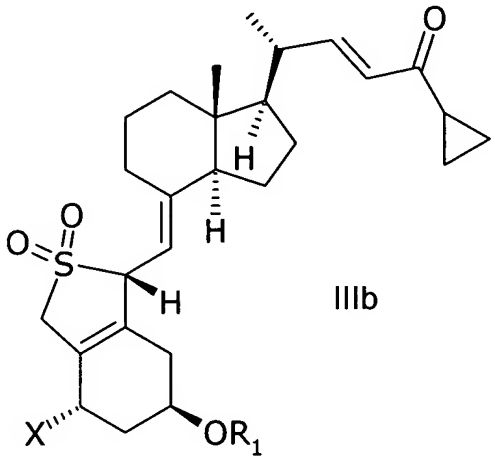
50. (New) A method according to claim 48, wherein R_1 and/or R_2 represent *tert*-butyldimethylsilyl.

51. (New) A method for producing calcipotriol {(5Z, 7E, 22E, 24S)-24-cyclopropyl-9,10-secochola-5,7,10(19),22-tetraene-1α-3β-24-triol} or calcipotriol monohydrate comprising the method of claim 30, 44, or 47.

52. (New) A compound of general structure IIIa or IIIb, or mixtures thereof,



IIIa

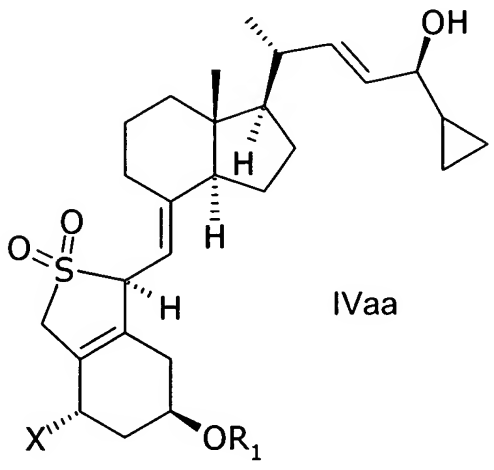


IIIb

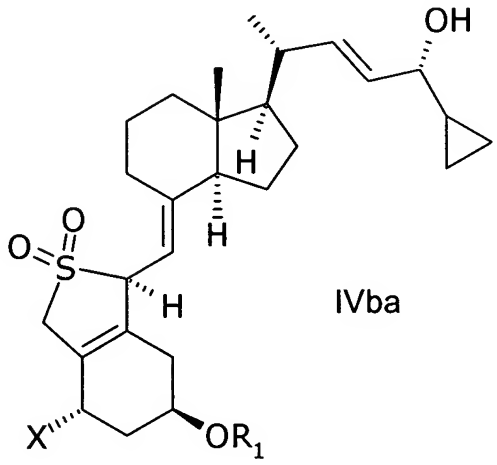
wherein X represents either hydrogen or OR_2,

and wherein R_1 and R_2 may be the same or different and represent hydrogen, or a hydroxy protecting group.

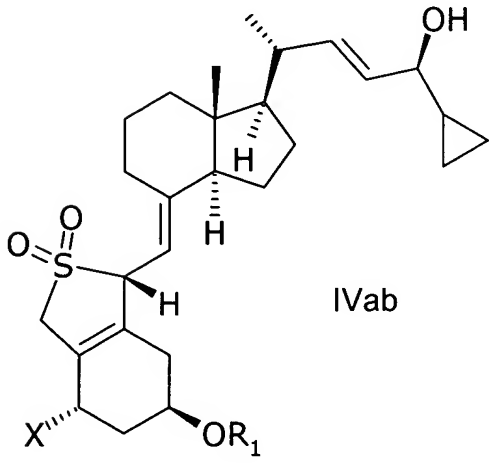
53. A compound of general structure IVaa, IVab, IVba, IVbb, IVb, or mixtures thereof,



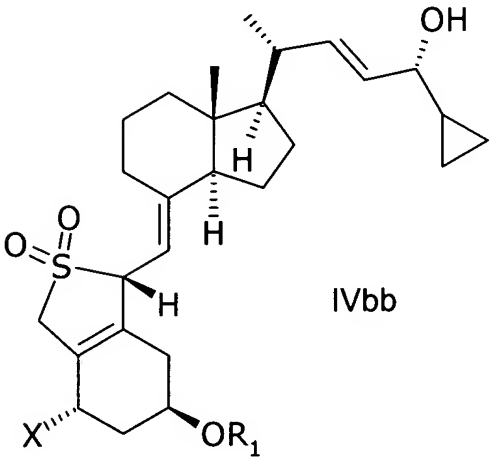
IVaa



IVba



IVab



IVbb

wherein X represents either hydrogen or OR_2,

and wherein R_1 and R_2 may be the same or different and represent hydrogen, or a hydroxy protecting group.

54. (New) A compound according to claim 52 or 53, wherein X represents OR_2.

55. (New) A compound according to claim 54, wherein R_1 and R_2 represent alkylsilyl.

56. (New) A compound according to claim 54, wherein R_1 and R_2 represent *tert*-butyldimethylsilyl.

57. (New) A compound according to claim 54, wherein R_1 and R_2 represent hydrogen.

58. (New) Use of a compound according to claim 52 or 53 as an intermediate in the manufacture of calcipotriol or calcipotriol monohydrate.